

PROCEEDINGS  
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DESCRIPTION OF A NEW RED FOX FROM NOVA  
SCOTIA.

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For some years I have known of the existence in Nova Scotia\* of a large red fox, much larger and of a deeper color than the small yellowish red *Vulpes pennsylvanica typica* (Bodd.) of the Central States. I have had some difficulty in getting specimens of this fox, but now have a series of five skins and six skulls from Digby, Bear River, and Annapolis, Nova Scotia. Unfortunately my specimens are mostly females or young. I have no skin and only one skull of a very old male. The old males are often of great size. My friend, H. A. P. Smith, Esq., of Digby, who has killed very many, has several times taken them weighing close to twenty pounds.

The Nova Scotia fox presents all the color phases known as 'cur,' 'cross,' 'silver gray,' and 'black' foxes. One of my specimens is a fine 'cross.' The new fox in its normal red pelage is a very beautiful animal, and the fur is well known to dealers, who pay much higher prices for it than for the fur of the southern red fox.

The new form may be known as :

***Vulpes pennsylvanica vafra* subsp. nov.**

*Type* from Digby, Nova Scotia, No. 116, female, old adult. Collection of E. A. and O. Bangs. Collected November 3, 1893, by O. Bangs.

*General characters.*—Size considerably larger than *Vulpes pennsylvanica*

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\*This large form probably ranges throughout Boreal Eastern North America generally.

*typica*. General color of upper parts bright ferruginous instead of tawny ochraceous, as in *V. pennsylvanica typica*.

*Color* (the type in normal red phase).—Whole upper parts deep, bright ferruginous, somewhat mixed with yellow-tipped hairs on face and rump, this color extending around sides and almost meeting on belly; abdomen, inner sides of flanks, and upper lip white; throat, chin, and central line along belly grayish white; tail ferruginous with a conspicuous white pencil, many of the hairs black tipped; upper surface of ears black, edged all round with yellowish ferruginous and dirty white inside; hand and forearm black, gradually shading into ferruginous at elbow; foot black, slightly mixed with ferruginous, the black extending up flank in a narrow line.

*Cranial characters*.—Skull larger than that of *V. pennsylvanica typica* from the Central and New England States; rostrum broader; distance across roots of canines much greater; dentition much heavier.

Size of an old adult ♀ skull (the type): basilar length (basion to front of premaxillary), 133; occipitonasal length, 133.2; zygomatic breadth, 75.8; mastoid breadth, 46; greatest breadth of rostrum, 24; greatest length of single half of mandible, 106.8. Size of an old adult ♂ skull (No. 2001, Bangs collection, topotype): basilar length, 134.2; occipitonasal length, 135.2; zygomatic breadth, 79.4; mastoid breadth, 47; greatest breadth of rostrum, 25.8; greatest length of single half of mandible, 110.4. Two skulls of *V. pennsylvanica typica* of exactly corresponding ages measure as follows: ♀ old adult, from Hampton, Connecticut, No. 4286, Bangs collection: basilar length, 120; occipitonasal length, 122.6; zygomatic breadth, 71.6; mastoid breadth, 44; greatest breadth of rostrum, 21; greatest length of single half of mandible, 96.8. ♂ old adult, from Waltham, Massachusetts, No. 115, Bangs collection: basilar length, 123.4; occipitonasal length, 123.6; zygomatic breadth, 71.8; mastoid breadth, 44; greatest breadth of rostrum, 21.8; greatest length of single half of mandible (estimated, tip imperfect), 100.

*Size*.—Female, old adult (the type): total length, 1077; tail vertebræ, 401; hind foot, 166. Male, young adult, from Annapolis, Nova Scotia (No. 1991, Bangs collection): total length, 1087; tail vertebræ, 403; hind foot, 173. Two specimens of *V. pennsylvanica typica* of corresponding ages (♀ old adult from Hampton, Connecticut, No. 4286, Bangs collection, and ♂ young adult from Pittsfield, New Hampshire, No. 650, Bangs collection) measure respectively: total length, 945; tail vertebræ, 340; hind foot, 143; and total length, 1028; tail vertebræ, 375; hind foot, 157.

*Remarks*.—As some European writers still persist in considering the American red fox a mere variety of the old world *Vulpes vulpes*, it may be well to point out a few of the characters by which these wholly distinct animals can always be distinguished.

The European red fox (*V. vulpes*) has more white on the upper lip and less black on the legs and arms than the American (*V. pennsylvanica*). The skulls of the two can always be told apart. *V. vulpes* has a heavy, massive skull, with deep interorbital constriction, narrow frontals, and a very wide palate. *V. pennsylvanica* has a much lighter skull, which is

broader between the orbits and narrower across the palate. There is also a very striking difference in the upper outline of the skulls when viewed in profile. This line is nearly straight in *Vulpes vulpes*, while in *V. pennsylvanica* it dips decidedly in front of the root of the zygoma and rises between the orbits.

I can find no name based on the large northern red fox.

Desmarest, in 1820, called the 'cross fox' *Canis decussatus*, and refers to Geoffroy Collection du Museum.\* It is given as an inhabitant of "L'Amérique Septentrionale." As all three races of our red fox occasionally show this color phase, the name cannot be said to apply to one more than another.

Desmarest's *C. argentatus* is said to inhabit America and Asia. *Canis argentatus* 'The silver fox' dates (so far as I can ascertain) from Shaw's General Zoölogy, 1800-1826, and is based on Pennant, who says it inhabits the forests of Louisiana (in his day the whole lower Mississippi Valley). This name must therefore have been given to the 'silver gray' phase of the Southern red fox *V. pennsylvanica typica*.

Richardson in Fauna Boreali-Americana, 1829, gives three 'red foxes': *Canis (Vulpes) fulvus* (Desmarest).†

*Canis fulvus* var.  $\beta$  *decussatus* (Geoffroy, Coll. du Mus.).

*Canis fulvus* var.  $\gamma$  *argentatus* (Desmarest).

Richardson's *Canis fulvus* is not *Vulpes pennsylvanica typica*, but the subspecies named *Vulpes macrourus* by Baird in 1852. Richardson assigns no different range to his var. *argentatus*, which must be assumed to be the 'silver gray' phase of the same form. He quotes a description of var. *decussatus* from Joseph Sabine's Appendix to Franklin's Journey, 1823, p. 656. All Sabine says as to locality, under the head of this variety, is "The specimen received from Capt. Franklin and that from the Hudson Bay Company nearly correspond." The animal described might have been an example of any form in the 'cross' phase and most probably was the prairie fox, *V. pennsylvanica macroura* (Baird).

While all our red foxes sometimes present the various different color phases, still 'cross' and 'silver gray' foxes are more common northward. This corresponds with the general tendency among our mammals which are subject to melanism. It is now known that black woodchucks and black gray squirrels are more often met with at the northern part of the range of these species, and the same will probably prove to be the case with many other species.

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\* This reference I have been unable to verify, only one copy of the work being known to exist, and that in the Paris Museum. Under the head of *Canis decussatus* Geoff. in Nouveau Dictionnaire D'Histoire Naturelle, 1816, vol. 6, p. 518, appears the following, apparently written by Desmarest: "Cette espèce est du nord de l'ancien continent. Selon M. Cuvier elle ne diffère point de celle du renard commun." From this I infer that Geoffroy gave the name *Canis decussatus* to the European 'Cross Fox.'

† *Canis fulvus* of Desmarest, 1820, is, of course, antedated by *Canis vulpes* var.  $\delta$  *pennsylvanicus* Boddaert, 1785, as shown by Gray (P. Z. S., 1868 p. 518).